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Call waiting method for modem - involves displaying signal
indicating calls waiting on user screen, and accepting commands from user
to place both modems on hold so user can answer telephone call

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Number of Countries: 001 Number of Patents: 001

Patent Family:

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Priority Applications (No Type Date): CA 2138565 A 19941220

Patent Details:

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CA 2138565	A		19				

Abstract (Basic): CA 2138565 A

The method involves placing a 'line monitor' between the incoming telephone line and the modem. When a data connection occurs, and a person attempts to contact the person by telephone, the device will intercept the call waiting signal and display a signal on the users screen.

If the user desires to answer the incoming call, the user will then type a command and both modems are placed on hold for a predetermined amount of time. The user can then pick up the call. When the user has finished the call they will then hang up and another command will be entered to re-establish the modem connection.

Dwg.1/13

Title Terms: CALL; WAIT; METHOD; MODEM; DISPLAY; SIGNAL; INDICATE; CALL;
WAIT; USER; SCREEN; ACCEPT; COMMAND; USER; PLACE; MODEM; HOLD; SO; USER;
CAN; ANSWER; TELEPHONE; CALL

Derwent Class: W01

International Patent Class (Main): H04M-011/06

International Patent Class (Additional): H04M-003/48

File Segment: EPI

Manual Codes (EPI/S-X): W01-C02B2; W01-C02B3; W01-C05B3A





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(22)		1994/12/20
(43)		1996/06/21

(51) Int.Cl. ⁵ H04M 11/06; H04M 3/48

(19) (CA) **APPLICATION FOR CANADIAN PATENT** (12)

(54) Modem with the Call Waiting Feature

(72) Sultan, Kareem - Canada ;

(71) Same as inventor

(57) 3 Claims

Notice: This application is as filed and may therefore contain an incomplete specification.



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Canada

Specifications

The following is a standard call-waiting procedure (voice).

User-1 is connected to user-2(Fig.1). When user-3 tries to connect with user-1, a switching machine recognizes that user-1 is already connected to another user(Fig.2). In this case the switching machine will send user-1 a signal informing him that another user is trying to contact him. User-1 can then:

1. Accept the interrupting call by signaling back. Then the connection between user-1 and user-2 is disconnected temporarily. User-1 and user-3 are then connected (Fig.3). When user-1 and user-3 finish the conversation, user-1 will signal the switching machine, telling it that he is done. Then the switching machine will reconnect user-1 with user-2 (Fig.4).

2. Reject the incoming call by ignoring the signal. The switching machine will stop trying to connect with him after a defined period of time.

The following is the standard modem connection.

User-A connects with user-B. A continuation signal is transmitted back and forth between the two modems confirming that the other carrier is there. When the continuation code is not sent by the modem of user-A then the modem of user-B hangs up. The handshake code must be sent back and forth continuously.

The following is the standard call-waiting procedure (modem).

User-A is connected to user-B (Fig.5). When user-3 tries to connect with user-A, the switching machine recognizes that user-A is already connected to another user (Fig.6). When the switching machine sends the signal, the modem automatically accepts the call, which then disconnects the two modems temporarily. The continuation carrier that is supposed to go back and forth is not sent anymore and user-A and user-B are completely disconnected. Then user-A's telephone (voice) begins to ring. When user-A picks up the telephone, he is connected to user-3 (Fig.7).

If user-A adjusts his initialization string (by typing *70, after "ATDT"), all interrupting calls are automatically rejected by the computerized switching machine.

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ABSTRACT

A method for having a modem use the call waiting feature by placing the data connection on hold while the user uses the telephone is invented. A device which can detect the call waiting signal and upon detection display a message on the user's monitor that there is an incoming call waiting for him/her to answer is invented. A "Line Monitor" will be placed between the incoming telephone line and the modem. When there is a data connection, and a person attempts to contact the modem user by telephone, the device will intercept the call waiting signal and place a message on the users screen. If the user decides to answer the incoming call, the user will then type a command and both modems are placed on hold for a predetermined amount of time. Then the user can pick up the telephone and respond to the call. When the user is finished with the telephone call he/she will then hang up and another command is entered to re-establish the modem connection.

The following is the present invention. "Call-waiting with a modem."

User-A is connected to user-B (Fig. 8). The handshake code is being sent back and forth now. The "Line Monitor" (LM) is monitoring the data being transferred back and forth on the line. User-3 tries to connect to user-A (Fig.9). The switching machine will then send a signal to user-A not knowing whether there is a modem or a telephone there. User-A's "Monitoring Device" should translate this signal into a message to be displayed on the screen of the computer connected to the modem, informing the user there is an incoming call. User A can then:

a) type a command which tells the modem to send a different code than the original code sent back and forth. This code will tell user-B's modem not to send a handshake code or to expect a handshake (but receive one if one comes in) for a while. It will also tell user-A's modem not to send and NOT to receive a handshake code. While the two modems are on hold, user-A can pick up his telephone and talk to user-3 (Fig. 10). When he is done user-A can then type another command that will tell the modem to send the continuation code to user-B. User-B's modem will then receive the continuation code and User-A and user-B are reconnected (Fig. 11).

b) type a command which tells the device to ignore this incoming call.

The following needs to be done to perform this task.

A device that can translate the signal into a message on the screen must be designed.
A command must be created that will activate and disable sending the second handshake code.

A user needs to do the following to use this function.

The device that can translate the call-waiting signal into a message on the screen must be available.

The user's software must be updated to be able to use the command to activate the "hold" mode.

Components of the "Line Monitor"

The Line Monitor has 4 main components:

Filter- allows all data to pass directly to the modem except the call-waiting signal

Translator- takes the call-waiting signal from the filter and sends a digital message to the combiner

Combiner- combines the digital message from the translator with the data going to the modem

Switch- switches the line between the modem and the telephone

Feeder- sends the continuation code to the modem to which it is connected to ensure continuity

The telephone line comes from the wall jack to the Line Monitor, and from the Line Monitor to the modem. A telephone must be plugged into the Line Monitor.

While the user is on-line with the modem, the Line Monitor monitors the data flowing on the telephone line. When it detects a call-waiting signal it intercepts it then feeds it to the translator. The translator then translates the signal to a digital message and then sends the digital message to the combiner. The combiner interleaves the message with the data flowing on the telephone line. The user will then receive a message on her monitor stating there is an incoming call-waiting for her to answer. Also prompting the user to push "Y" if the user wants to receive the message, or "N" if the user does not want to receive the message. If the user types "N", the Line Monitor will ignore the incoming call-waiting signal. If the user types "Y" the modem will send a signal to the other modem (that has another Line Monitor) telling it to "Please Wait". The filter at the other end will receive this signal (see note below) and tell the feeder to send the continuation code to the modem it is connected to. The first user's Line monitor will then send the continuation code to itself, then the switch will then connect the telephone. Now the two modems believe they are still connected to each other, and the user's telephone will then ring and he/she can pick up the telephone and speak with the caller.

When he/she is finished with the call, he/she can then hang up the telephone. The Line Monitor will then do the following:

- switch the line from the telephone to the modem
- send a signal to the other user's Line Monitor telling it to stop sending the continuation code to itself
- stop sending the continuation code to itself
- send the continuation code over the line to the other modem

Both modems are now back on-line.

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NOTE:

There maybe different ways of assuring continuation. These should be investigated. Regardless of the continuation code, we suggest the following control method:

The "Line Monitor" should have a circuit which detects the "Please Wait" signal and produces a local continuation signal of the same format used during the usual communication between the two modems. This is necessary to insure that the party which is asked to wait can be put on hold until the modem to modem communication is resumed.

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Claims

1. A means of using the call-waiting feature with a modem.
2. A means of changing the call-waiting signal into a message on a monitor.
3. A device which can detect and intercept the call-waiting signal.

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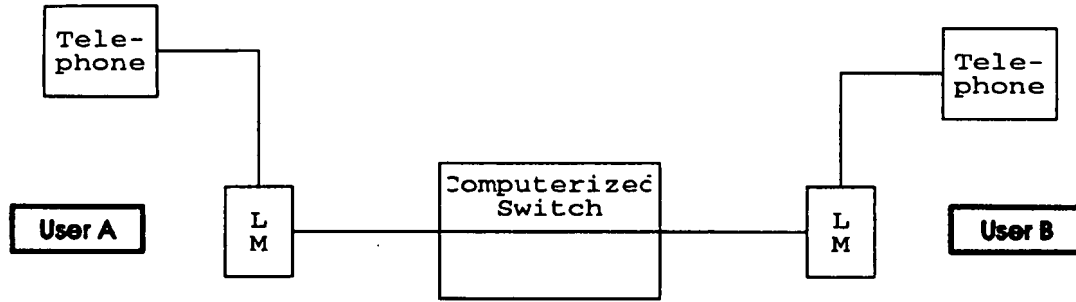


FIGURE 1

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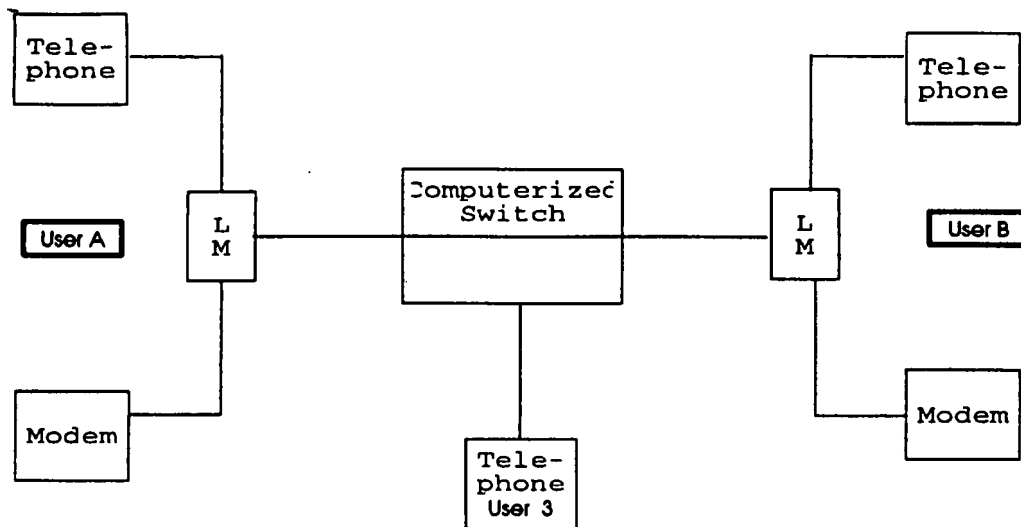


FIGURE 2

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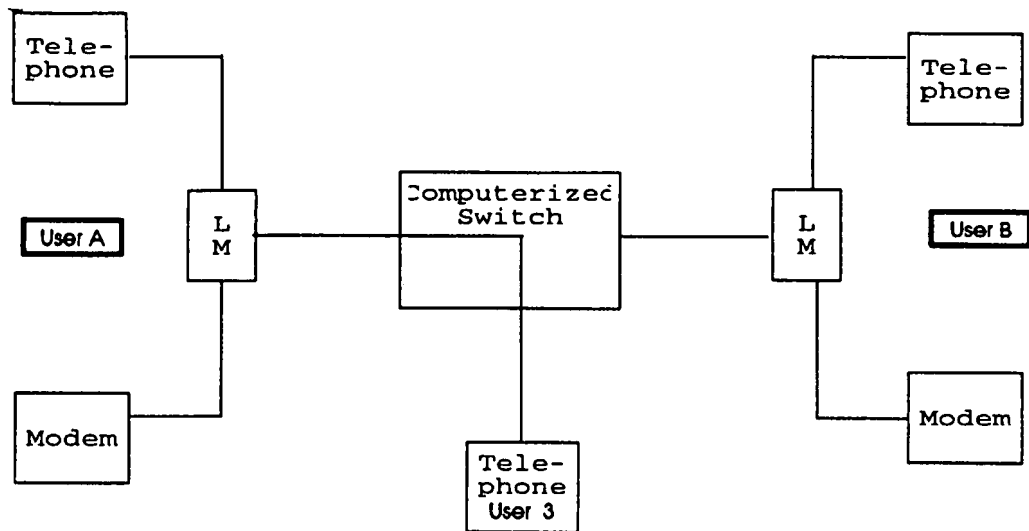


FIGURE 3

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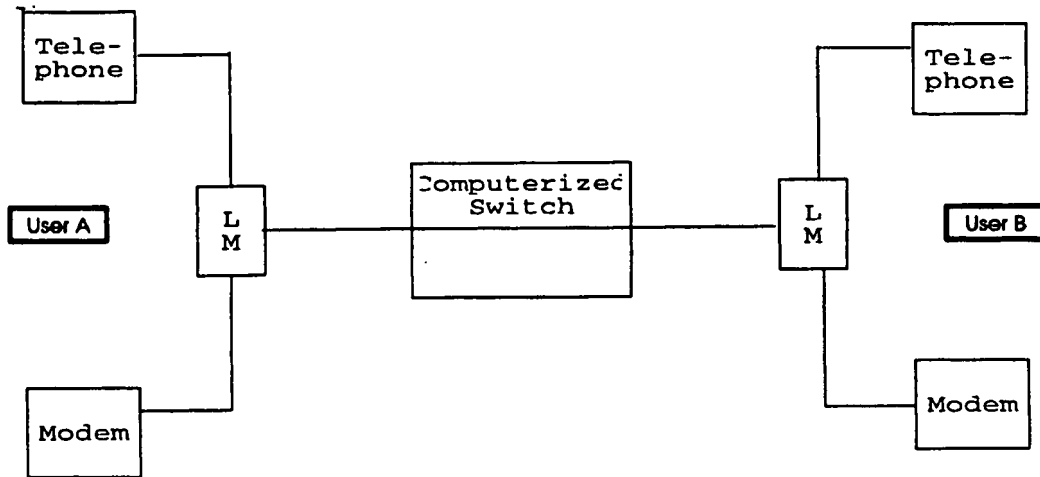


FIGURE 4

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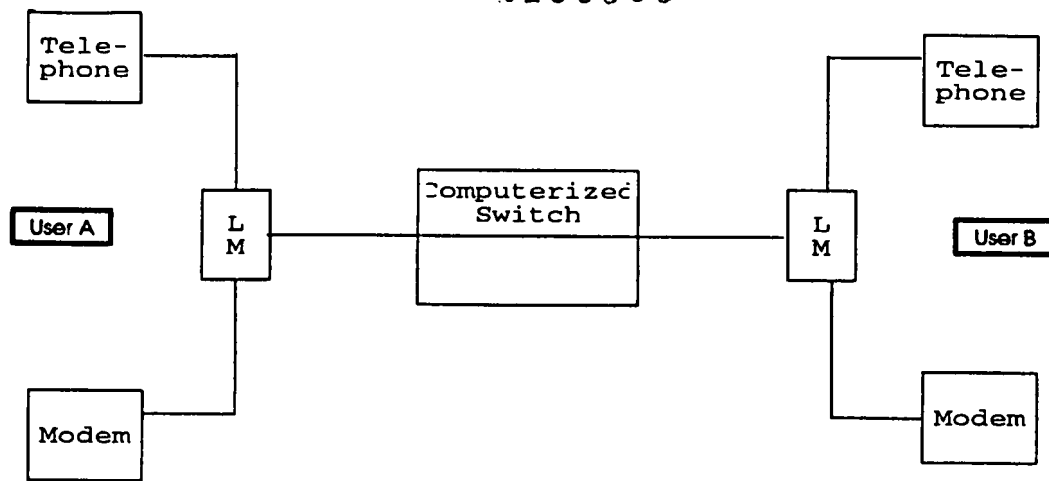


FIGURE 5

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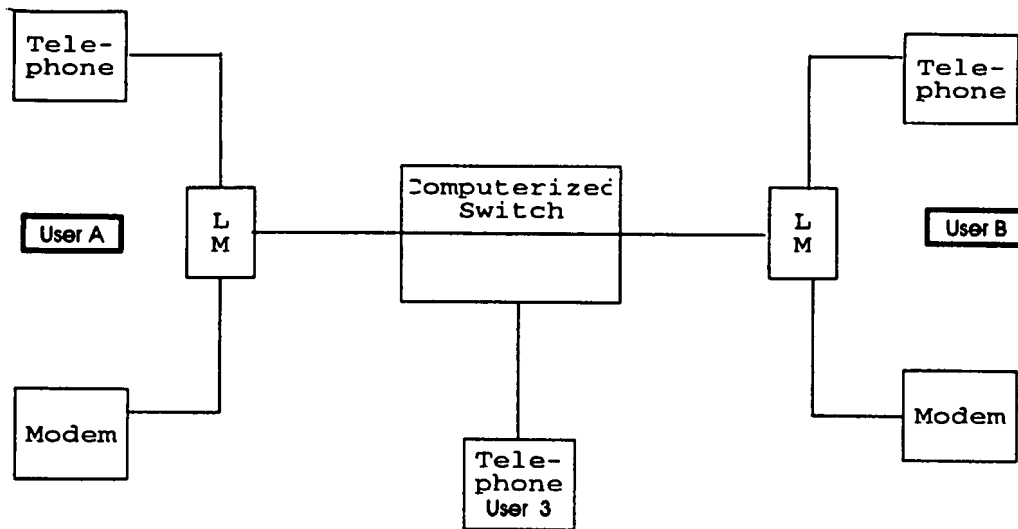


FIGURE 6

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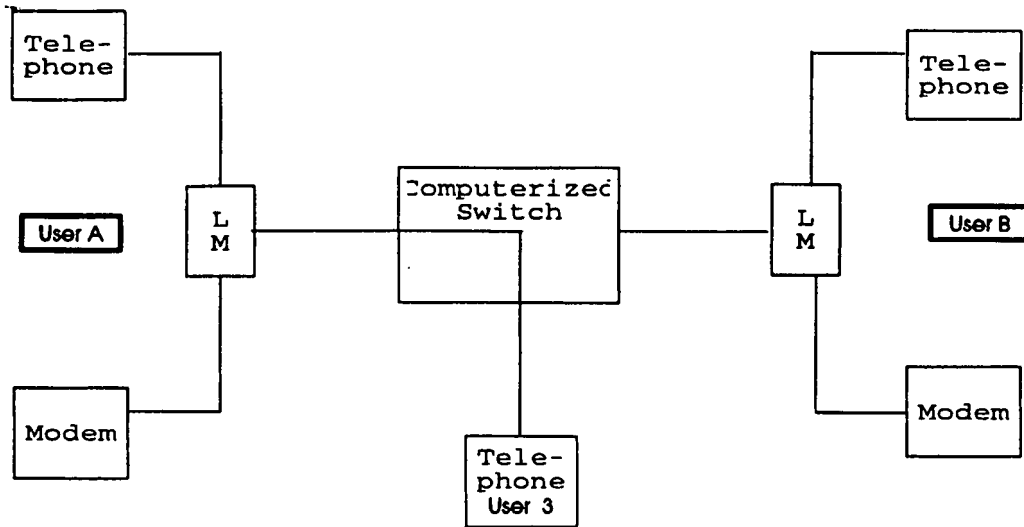


FIGURE 7

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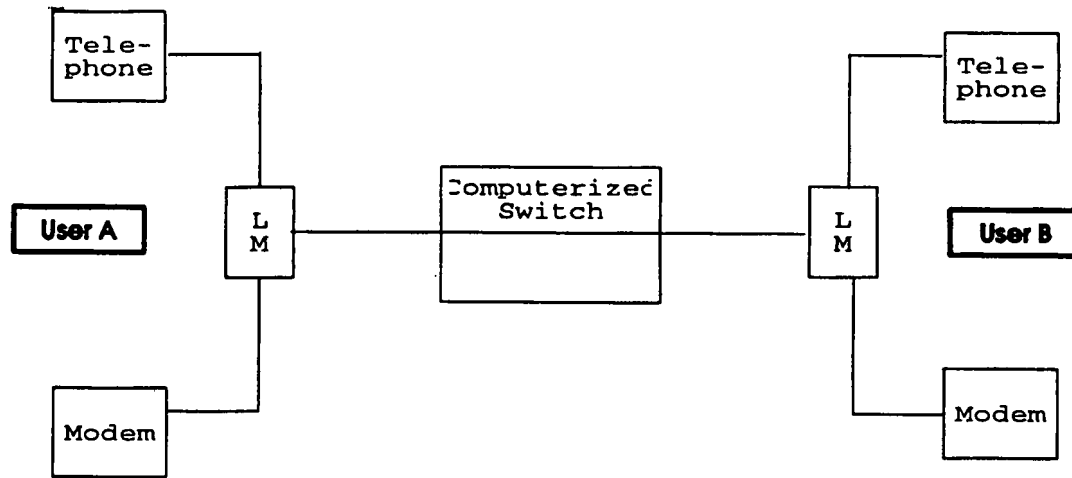


FIGURE 8

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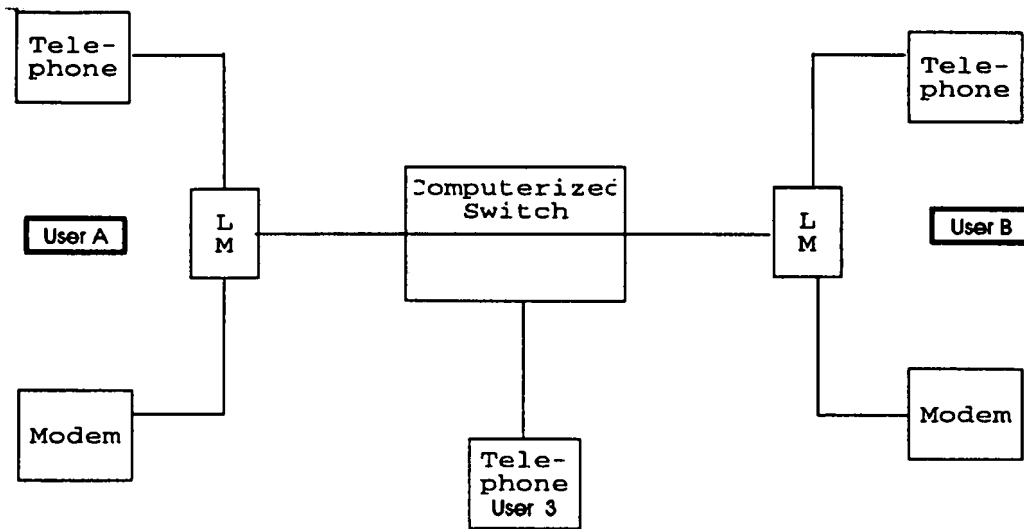


FIGURE 9

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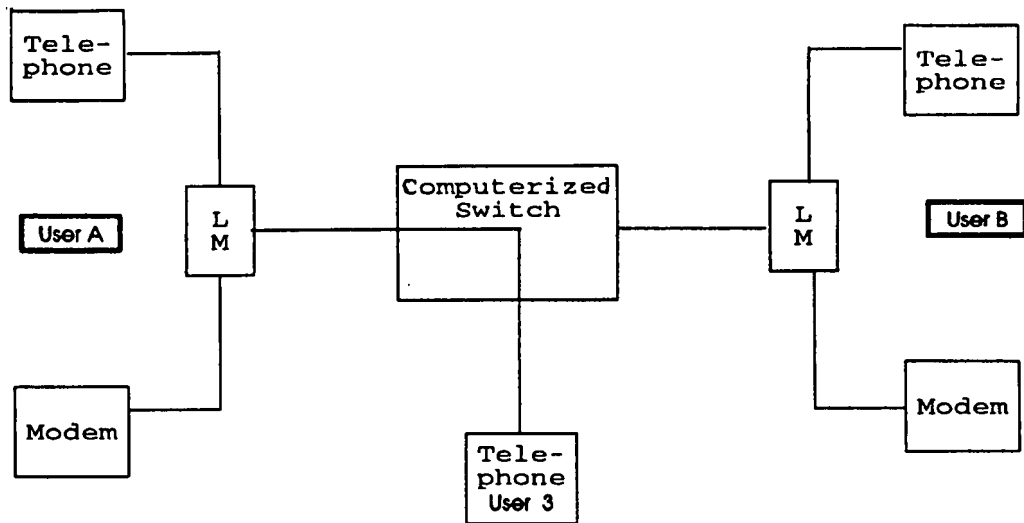


FIGURE 10

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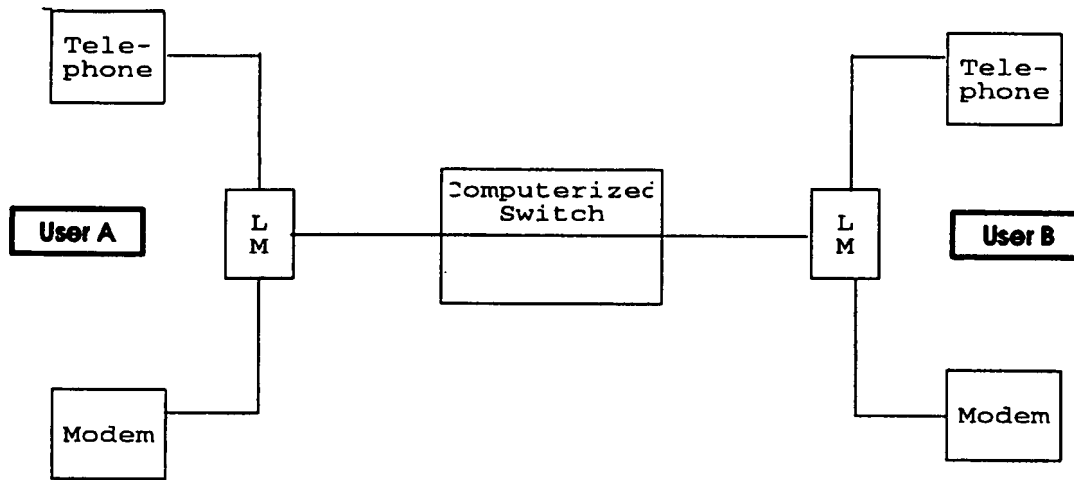


FIGURE 11

